DOCUMENT RESUME

ED 253 782 CG 017 984

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TITLE Assessing Effectiveness of DISCOVER in a Small Campus Career Development Program.
PUB DATE [83]
NOTE 16p.; For related document, see CG 018 011.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Career Exploration; *Career Guidance; *College Students; Higher Education; *Program Effectiveness; Small Colleges
IDENTIFIERS Computer Assisted Guidance; *DISCOVER System

ABSTRACT

To test the effectiveness of the DISCOVER computer-based career development system, 46 college students completed the Survey of Career Development, the Information-Seeking Behavior Log, and the Self-Assessment of Confidence and Progress in Educational/Career Planning. The instruments were administered as pre- and post-treatment indicators to two treatment groups and a control group. One treatment group used the DISCOVER system with no additional treatment; the second group participated in a 5-week Career Exploration Workshop and used DISCOVER in conjunction with the workshop. Results showed that participants in the two treatment groups compared to the no-treatment control group improved significantly on seven of nine scores. DISCOVER seems to be effective in assisting students in their career planning, and to be a positive supplement to existing career development programming.
(Author/LLL)

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# Assessing Effectiveness of DISCOVER in a Small Campus Career Development Program

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CG 017984

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## Abstract

To test the effectiveness of the DISCOVER computer-based career development system, a study evaluated the improvement of college students' scores on three instruments. The Survey of Career Development, an Information-Seeking Behavior Log, and a Self-Assessment of Confidence and Progress in Educational/Career Planning were administered as pre-and post-treatment indicators to two treatment groups and a control group. One treatment group used the DISCOVER system with no additional treatment, the second group participated in a five-week Career Exploration Workshop and used DISCOVER in conjunction with the workshop. Significant positive results were obtained on seven of the nine scores calculated, indicating that DISCOVER seemed to have a beneficial effect on college students' career planning.

# Assessing Effectiveness of DISCOVER in a Small Campus Career Development Program

Within a multi-campus university, some equality of career development services at each campus is a desired goal. One possible way to begin to provide some parity for campuses with very disparate student service staffing patterns is to consider a computer-based career development system. Using this media-based mode of delivery appears to be a cost-effective way to deliver career development services.

In 1981, The Pennsylvania State University's Career Development and Placement Center purchased and installed DISCOVER. A computer-based career development system developed by Rayman and Bowlsbey, DISCOVER provides information storage and retrieval, enabling the user to interact with the computer in working through guidance exercises or interviews.

The DISCOVER system provides users with a systematic program of

self-assessment, information, and decision-making theory and application. This program is organized into 8 basic modules, or units: 1) values, 2) decision-making, 3) organization of the world of work, 4) interests and abilities, 5) developing a list of occupations, 6) detailed information about occupations, 7) narrowing a list of occupations and 8) implementing career plans.

The installation of DISCOVER at the University Park, New Kensington, and York Campuses of Penn State allowed the Career Development and Placement Center to evaluate the effectiveness of this system at a large multi-versity campus such as University Park, with approximately 34,000 students, as well as at the smaller Commonwealth Campuses such as New Kensington and York, each with approximately 1000 students. Questions to be considered in a two-year pilot evaluation of DISCOVER included: "Does the system effectively assist students in their career planning?" and "Can the DISCOVER system be integrated into existing career development programs?"

Previous evaluations of the DISCOVER system had been undertaken by Rayman, Bryson, and Bowlsbey (1978) and Rayman (1979). While these studies reported basically positive effects, the investigators were all DISCOVER developers, and as Garis (1981) points out, there is potential for experimenter bias.

Penn State's evaluation of DISCOVER was initiated by Garis (1981) in a University Park study. Garis' study investigated the effects of DISCOVER on three treatment groups: students using DISCOVER only, students participating in individual career counseling, and students in individual career counseling with supporting DISCOVER use. A fourth group served as a no-treatment control.

This article discusses a roughly parallel study undertaken at York Campus, using several of the same instruments as Garis. However, one of the primary career development programs at York Campus is the Career Exploration Workshop, a five session non-credit program offered several times each year to students. It was decided to evaluate the usefulness of DISCOVER alone, but then to also investigate the effect of integrating DISCOVER into the Caree. Exploration Workshop. The expectation was that students who took the Career Exploration Workshop, with its small group discussion and interaction, and used DISCOVER, would have the greatest positive change, and the DISCOVER-only students would show significant positive change, when compared to the no-treatment control students.

## Method

### Participants

All students enrolled in resident-instruction (day school) courses at Penn State/York during Winter Term 1982 were asked to volunteer to participate in a research project in career development. Participant volunteers were first and second year college students from both the baccalaureate and associate degree level.

Volunteers were told that they would be randomly assigned to one of two treatment groups: a) DISCOVER group or b) Career Exploration Workshop (CEW) group, or to the no-treatment control group. It was indicated that the program would provide them with a way to look at their own academic and career goals and help them with decisions regarding choice of major or career.

A total of 69 students, out of the campus population of approximately 1000, volunteered for the research project and were interviewed individually by a staff member to acquaint them with the study and to determine the level of assistance needed with academic and career planning. Students who had an urgent need to make a choice of major were referred for individual counseling, and did not participate in the study. Several students who were currently using DISCOVER, or who had had an extensive career development course, were screened out of the project. Once

students were informed about the project, they were asked to sign a "contract" if they wished to participate. The "contract" indicated the general requirements of each treatment group including the approximate time commitment, and for the control group, signified that they would participate in no career development activity during the 5 weeks of the project.

At the conclusion of the study, usable pre and post test data were available from 13 participants in the DISCOVER group, 19 in the Career Exploration Workshop group, and 14 in the control group.

## Instruments

Pre-test and post-test data were gathered using several instruments:

1) The Survey of Career Development (SCD) (Rayman and Super, 1978) was developed for use specifically with DISCOVER. It is an on-line evaluation of a user's "need" for specific aspects of the DISCOVER system. As it was used in this study, in paper format, the scores on the five sections of the SCD indicate the participants knowledge of five areas of career development: values, interests and competencies, decision-making, occupations, and career planning. For this study, a total score was also calculated.

2) Self-Assessment of Confidence and Progress in

Educational/Career Planning (SACP) (Garis, 1981) This 10-item survey was developed by Garis to evaluate the participants' confidence in their knowledge of their work values, interests, abilities, academic and career options available to them, as well as confidence in their current choice of major and future career plans. A total score was utilized for this study.

3) Information-Seeking Behavior Log (Garis, 1981) Also developed by Garis for his study, this Log requested participants to indicate specific activities concerning their use of resources in obtaining academic/career information. In this study, estimates of the number of hours spent in the Career Center and the number of different materials used were considered.

## Procedure

Participants were assigned to one of the two treatment group or to the control group. Students in the DISCOVER group were required to complete at least the first four modules of DISCOVER, dealing with values, decision-making, organization of occupations, and evaluation of interests and abilities. As was anticipated, most students continued through several more modules of DISCOVER, developing a list of occupations and getting information about these occupations.

Students assigned to the Career Exploration Workshop participated in a five session program over a five week period, dealing with the topics of values, interests, abilities, decision making, organization of the occupational world, and gathering educational and career information. In addition to the small group interaction and discussion within the workshop, these participants were assigned, as "homework" for the CEW, to complete the corresponding modules of DISCOVER. Therefore, CEW participants received two perspectives on the career development topics.

Following the 5 weeks of the project, participants were post tested.

## Results

Participants in the two treatment groups (DISCOVER group and Career Exploration Workshop + DISCOVER group) improved significantly on seven of the nine scores obtained, over the five weeks of the study, when compared to the no-treatment control group.

A one-way analysis of variance of gain scores provided an indication of relative improvement for each group on the five scales of the Survey of Career Development, as well as the total score. Table 1 shows that only the Values scale of the SCD failed to show significant gain.

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Insert Table 1 about here.

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The Information-Seeking Behavior Log yielded two scores, and both showed significant gain for the two treatment groups when compared to the control group. The "number of hours spent in the Career Center" increased by 5.5 hours for the DISCOVER group, by 5.7 hours for the Career Exploration Workshop group, and only .7 hours for the control group, $F = 11.04$, $p < .001$. The "number of materials used" showed increases of 2.1 and 2.8 for the DISCOVER group and CEW group respectively, compared with .8 for the control group, $F = 3.61$, $p < .05$. It would be expected that the treatment groups would show significant increases especially in information seeking behavior, since the contract with participants indicated control group members would engage in "no career development activity during the 5 weeks of the project."

The Self-Assessment of Confidence and Progress in Educational/Career Planning did not show significant differences between control and treatment groups although the DISCOVER group gained 4.3 and the CEW group gained 5.6 compared to the 1.7 mean gain for the control group.

## Discussion

This study appears to provide some answers to the questions posed earlier: DISCOVER does seem to be effective in assisting students in their career planning, and it also seems to be a positive supplement to the existing career development programming at York Campus.

Mean point gain was highest on all measures for students who participated in the Career Exploration Workshop and used DISCOVER concurrently. While these scores were not significantly higher than for the DISCOVER-only group, both treatment groups did show significantly more gain than the control group.

While the contract format of the study was intended to ensure that the students in the two treatment groups used at least a minimal number of DISCOVER modules, it may have caused an unnatural suppression effect on the control students, by specifying that control students engage in no career development activity.

Overall, the York Campus study results are similar to the results obtained by Garis (1982) in his study. While the statistics used were not directly comparable, Garis reported that he found significant differences between both treatment groups and the control group for all 6 scales of the Survey of Career Development, for the one scale measuring Confidence and Progress in Educational/Career Planning, and for the two scores from the

Information Gathering Behavior Log. In addition, Garis used the Career Development Inventory (CU form) recently developed by Super, Thompson, Lindeman, Jordaan, and Myers (1981). CDI Scales A (Career Planning) and B (Career Exploration) discriminated statistically between treatment groups and control. No statistically significant group effects were found for Scale C (Decision-Making), Scale D (Work Information) or Scale E (Knowledge of Preferred Occupation) of the Career Development Inventory.

Probably more exhaustive studies need to be undertaken using instruments such as the Career Development Inventory, rather than the Survey of Career Development which was developed, as indicated earlier, specifically for use with DISCOVER. Additional thought needs to be given to longitudinal studies of computer-based career guidance systems to answer questions about whether students really do implement their computer-assisted career decisions.

While this study and Garis' (1982) study evaluated students using DISCOVER alone, with no counselor support, Bowlsbey and Rayman (1978) indicate that DISCOVER "is not viewed by its developers as a stand-alone career development system..." This would seem to necessitate additional research examining DISCOVER utilization in context with other career development components. It also raises some question examined by Sampson and Pyle (1983) regarding the ethics of computer based counseling without counselor intervention.

## Reference Notes

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Table 1

Mean Point Gain by Group

on the Survey of Career Development

| Survey of Career Development Scale | Group: DISCOVER only | Group: Career Workshop + DISCOVER | Group: Control | F between Groups |
|---|---|---|---|---|
| Self-awareness: Values | 3.5 | 4.6 | 1.6 | 1.41 |
| Self-awareness: Interests & Abilities | 5.1 | 6.8 | -0.7 | 13.32*** |
| Career decision-making | 7.8 | 8.1 | 0.9 | 7.22** |
| Occupations | 6.4 | 7.9 | 2.8 | 3.68* |
| Career planning | 3.8 | 6.7 | 0.6 | 6.47** |
| Total | 25.5 | 33.9 | 5.4 | 10.64*** |

* $p < .05$
** $p < .01$
*** $p < .001$